WHAT IS CLAIMED IS:

1.   A gateway for communicating telecommunication information between a telecommunication network and customer premises equipment, the gateway comprising:

a telecommunication interface operable to receive telecommunication information from the telecommunication network for communication to the customer premises equipment;

a management module operable to determine a bandwidth available to communicate the telecommunication information to the customer premises equipment and to select a compression algorithm according to the available bandwidth;

a compression module operable to compress the telecommunication information using the selected compression algorithm; and

a packetization module operable to generate data packets for communicating the telecommunication information.

2.   The gateway of Claim 1, wherein the customer premises equipment is an integrated access device (IAD) operable to receive the data packets using a digital subscriber line, a media terminal adapter (MTA) operable to receive the data packets using a cable line, or a wireless network interface unit (WNIU) operable to receive the data packets using a wireless link.

3.   The gateway of Claim 1, wherein the management module determines the available bandwidth by determining a total bandwidth between the gateway and the customer premises equipment and subtracting a bandwidth allocated to or reserved for other applications.

4.   The gateway of Claim 3, wherein the management module determines the total bandwidth by using active performance measurement (APM) software.
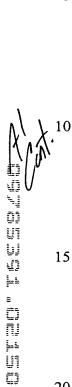
5.   The gateway of Claim 1, further comprising:

a memory operable to store customer premises information associating the customer premises equipment with one or more compression algorithms;

wherein the management module is further operable to select the compression algorithm for the telecommunication information using the customer premises information.

6.   The gateway of Claim 5, wherein the management module selects the compression algorithm for the telecommunication information by identifying the compression algorithm that can provide a highest quality of service using the available bandwidth with the customer premises equipment.

7.   The gateway of Claim 1, further comprising:

a memory operable to store subscriber information associating each of a plurality of subscribers with a class of service;

wherein the management module is further operable to identify a subscriber for the telecommunication information, to identify a class of service associated with the subscriber, and to select the compression algorithm according to the class of service.

8.   The gateway of Claim 1, wherein the management module is further operable to select the compression algorithm to maintain a threshold bandwidth for other applications.

9. A method for communicating telecommunication information between a telecommunication network and customer premises equipment, the method comprising:

receiving telecommunication information from the telecommunication network for communication to the customer premises equipment;

determining a bandwidth available to communicate the telecommunication information to the customer premises equipment;

selecting a compression algorithm according to the available bandwidth;

compressing the telecommunication information using the selected compression algorithm; and

generating data packets for communicating the telecommunication information.

10. The method of Claim 9, wherein the customer premises equipment is an integrated access device (IAD) operable to receive the data packets using a digital subscriber line, a media terminal adapter (MTA) operable to receive the data packets using a cable line, or a wireless network interface unit (WNIU) operable to receive the data packets using a wireless link.

11. The method of Claim 9, wherein determining the available bandwidth further comprises:

determining a total bandwidth between the gateway and the customer premises equipment; and

subtracting a bandwidth allocated to or reserved for other applications.

12. The method of Claim 11, wherein determining the total bandwidth further comprises using active performance measurement (APM) software.
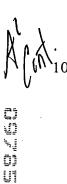
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13.   The method of Claim 9, further comprising:

storing customer premises information associating the customer premises equipment with one or more compression algorithms; and

selecting the compression algorithm for the telecommunication information using the customer premises information.

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14.   The method of Claim 13, wherein selecting the compression algorithm for the telecommunication information further comprises selecting the compression algorithm that provides the highest quality of service using the available bandwidth.

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15.   The method of Claim 9, further comprising:

storing subscriber information associating each of a plurality of subscribers with a class of service;

identifying a subscriber for the telecommunication information;

identifying a class of service associated with the subscriber; and

15   selecting the compression algorithm according to the class of service.

16.   The method of Claim 9, further comprising selecting the compression algorithm to maintain a threshold bandwidth for other applications.

17.   A system for communicating telecommunication information between a telecommunication network and customer premises equipment, the system comprising:

a gateway operable to receive telecommunication information from the telecommunication network for communication to the customer premises equipment, to determine a bandwidth available to communicate the telecommunication information to the customer premises equipment, to select one of a plurality of compression algorithms according to the available bandwidth, to compress the telecommunication information using the selected compression algorithm, and to generate data packets for communicating the telecommunication information to the customer premises equipment.

18.   The system of Claim 17, further comprising:

a digital subscriber line access multiplexer (DSLAM) operable to communicate the data packets generated by the gateway to the customer premises equipment using a digital subscriber line;

wherein the available bandwidth relates to a bandwidth of the digital subscriber line between the DSLAM and the customer premises equipment.

19.   The system of Claim 17, further comprising:

a cable modem termination system (CMTS) operable to communicate the data packets generated by the gateway to the customer premises equipment using a cable link;

wherein the available bandwidth relates to a bandwidth of the cable link between the CMTS and the customer premises equipment.

20.   The system of Claim 17, further comprising:

a base station controller (BSC) operable to communicate the data packets generated by the gateway to the customer premises equipment using a wireless link;

wherein the available bandwidth relates to a bandwidth of the wireless link between the BSC and the customer premises equipment.

21.   The system of Claim 17, wherein the gateway determines the available bandwidth by determining a total bandwidth for communications with the customer premises equipment and subtracting a bandwidth allocated to or reserved for other applications.

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22.   The system of Claim 21, wherein the gateway determines the total bandwidth by using active performance measurement (APM) software.

23.   The system of Claim 17, wherein:

10   the customer premises equipment communicates, to the gateway, compression information indicating one or more compression algorithms supported by the customer premises equipment; and

the gateway receives the compression information and selects the compression algorithm for the telecommunication information from the compression algorithms

15   supported the customer premises equipment.

24.   The system of Claim 17, wherein the gateway selects the compression algorithm in response to determining that the compression algorithm provides a highest quality of service using the available bandwidth.

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25.   The system of Claim 17, wherein the gateway is further operable to identify a subscriber for the telecommunication information, to identify a class of service associated with the subscriber, and to select the compression algorithm according to the class of service.

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26.   The system of Claim 17, wherein the gateway is further operable to select the compression algorithm to maintain a threshold bandwidth for other applications.